19e
Br

BROWN

sun controls

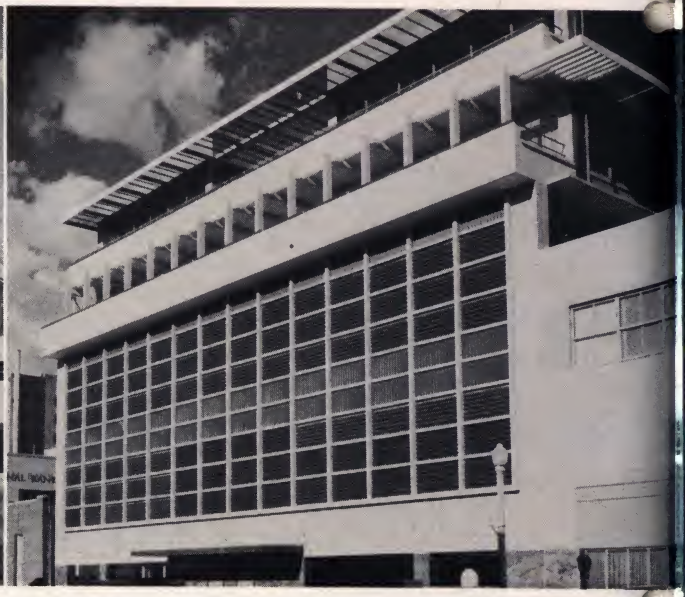
BROWN MANUFACTURING COMPANY • 1940 LINWOOD • OKLAHOMA CITY

1959

Contents

Office Building for Cabot Shops, Inc., Pampa, Texas
Short and Boren, Architects
Doyle Construction Co., Contractors SEE PAGE 8

Office Bldg – Professional Business Men's Insurance, Denver, Colorado
Fisher, Fisher and Davis, AIA Architects
Long Construction Company, Contractors SEE PAGE 15



First National Bank Parking Garage, Amarillo, Texas
Edmond Jura, Architect
James Taylor & Son, Contractor SEE PAGE 18

Office Building for IBM, Tulsa, Oklahoma
Hanton and Wilson, Architects
Insured Investments, Inc., Contractors SEE PAGE 9

Headquarters Building for Civil Aeronautics Administration,
Oklahoma City, Oklahoma
Hudgins, Thompson, Ball and Associates, Architects
Dan Tankersley and Associates, Contractors SEE PAGE 10

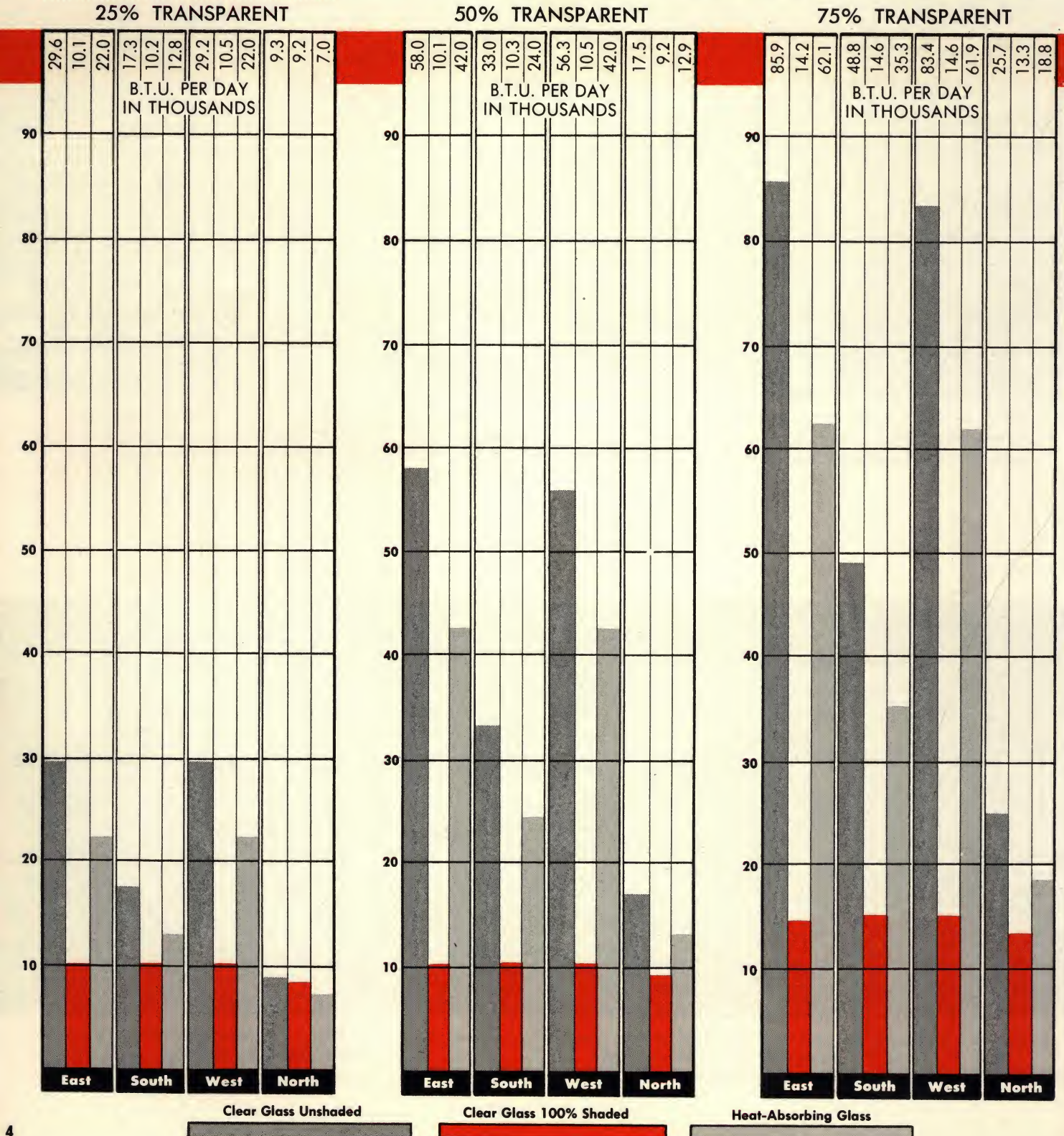
Missouri Public Service Company, Kansas City (Raytown), Missouri
Kivett, Myers and McCallum, Architects
J. E. Dunn Construction Company, Contractors SEE PAGE 17

Von Hamm Young Building, Honolulu, Hawaii
Vladimir Ossipoff, Architect SEE PAGE 21

How shading affects cooling costs

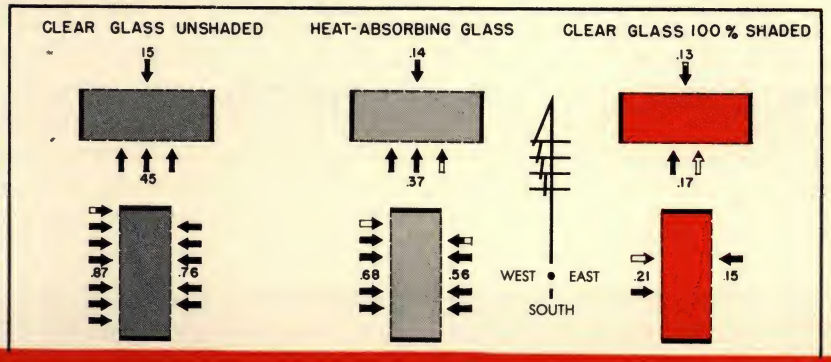
The information presented here is taken from the *Thermal Behavior of Metal Curtain Walls,* Study No. 6—Curtain Wall Research Project, School of Architecture, Princeton University, June, 1957, sponsored by the Committee of Stainless Steel Producers American Iron and Steel Institute. This information clearly indicates the economic importance of employing devices that will provide 100% shading for glass areas. On close examination it becomes apparent that effective shading* pays for itself by reducing the cooling tonnage requirements. Additional savings, in reduced operating costs, are enjoyed throughout the life of the building.

*Brown adjustable Sun Controls that cover all the glass provide 100% shade.

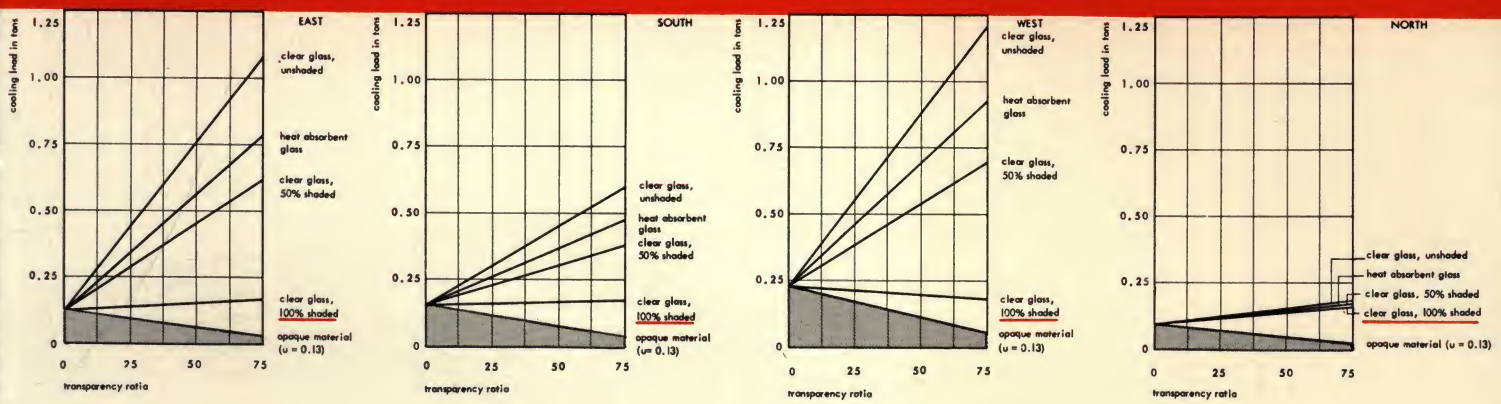


Average clear sky conditions in the New York - New Jersey area.

Effect of building orientation on cooling load



Orientation is not so important if 100% shading is provided. The illustration at left shows that an east-west orientation, 100% shaded, requires less cooling tonnage than a north-south orientation with no shade or even heat absorbent glass.



Cooling loads on walls at summer peak conditions

Shown above are the cooling tonnages required to offset heat gains imposed by summer sol-air design temperatures on walls facing each of the four orientations. For each wall, values are indicated for a variety of transparent area treatments and a range of transparency ratios. Note the consistently low cooling load required for clear glass, 100% shaded in all four orientations.

The table at right shows that outside venetian blinds* are far more efficient than inside venetian blinds and other devices listed. If you are planning to use large areas of glass, investigate the effects and possibilities of using Brown Sun Controls to provide 100% shading. The reduction in cooling load will more than pay for their purchase and installation.

*In effect, outside venetian blinds are Brown adjustable Sun Controls that cover all the glass.

At right: table from Heating, Ventilating, Air Conditioning Guide, 1957, published by the American Society of Heating and Air-Conditioning Engineers.

TABLE 24. EFFECT OF SHADING UPON INSTANTANEOUS SOLAR HEAT GAIN THROUGH SINGLE THICKNESS OF COMMON WINDOW GLASS

TYPE OF SHADING	FINISH ON SIDE EXPOSED TO SUN	FRACTION OF GAIN THROUGH UNSHADED WINDOW	
Canvas awning sides open	Dark or medium	0.25	
Canvas awning top and sides tight against building	Dark or medium	0.35	
Inside roller shade, fully drawn[a]	White, cream	0.41[f]	
Inside roller shade, fully drawn[a]	Medium	0.62	
Inside roller shade, fully drawn[a]	Dark	0.81	
Inside roller shade, half drawn[a]	White, cream	0.71	
Inside roller shade, half drawn[a]	Medium	0.81	
Inside roller shade, half drawn[a]	Dark	0.91	
Inside venetian blind, slats set at 45 deg[b]	White, cream	0.56[f]	
Inside venetian blind, slats set at 45 deg[b]	Diffuse reflecting aluminum metal	0.45[f]	
Inside venetian blind, slats set at 45 deg[b]	Medium	0.65[f]	
Inside venetian blind, slats set at 45 deg[b]	Dark	0.75[f]	
Outside venetian blind, slats set at 45 deg[b]	White, cream	0.15[f]	
Outside venetian blind, slats set at 45 deg[b, c] extended as awning fully covering window	White, cream	0.15	
Outside venetian blind, slats set at 45 deg, extended as awning covering ⅔ of window[c]	White, cream	0.43	
		Dark[d, f]	Green tint[e, f]
Outside shading screen solar altitude 10 deg		0.52	0.46
Outside shading screen solar altitude 20 deg		0.40	0.35
Outside shading screen solar altitude 30 deg		0.25	0.24
Outside shading screen solar altitude, above 40 deg		0.15	0.22

[a] Roller shades are assumed to be opaque. Some white shades may transmit considerable solar radiation. For white translucent shades fully drawn use 0.55 and for half drawn use 0.77.

[b] Venetian blinds are fully drawn and cover window. It is assumed that the occupant will adjust slats to prevent direct rays from passing between slats. If slats are fully closed (slats set at 90 deg.) use same factors as used for roller shade fully drawn.

[c] Commercial shade with wide slats. The sun may shine on window through sides of shade. Estimate the exposed portion of glass as unshaded.

[d] Commercial shade, bronze. Metal slats 0.05 inches wide 17 per inch and set at 17 deg angle with horizontal. At solar altitudes below 40 deg some direct solar rays are allowed to pass between slats, and this amount becomes progressively greater at low solar altitudes.

[e] Commercial aluminum shade. Slats 0.057 inches wide, 17.5 per inch, set at 17 deg angle with horizontal. At solar altitudes below 40 deg some direct solar rays are allowed to pass between slats and this amount becomes progressively greater at low solar altitude.

[f] From first paper in Reference 9.

VERTICAL VANES

Vertical vanes are a flexible design element that offers a challenging opportunity to the talented architect. They can be manufactured in such a wide variety of sizes and shapes that their use is limited only by the architect's imagination. The vertical models detailed on pages 8, 9 and 10 have proved to be the most economical for the basic application of window-height, floor-level height, and multi-story height. Any vertical model *can* be used as a fixed fin. However, adjustable fins are more functional and in most installations are more economical.

Continental Oil Company Restaurant, Will Rogers Turnpike, Vinita, Oklahoma
Hudgins, Thompson, Ball and Associates, Architects
Continental Oil Company, Contractors

The Roberts Center, Shreveport, Louisiana
Frey, Huddleston and Associates, Architects

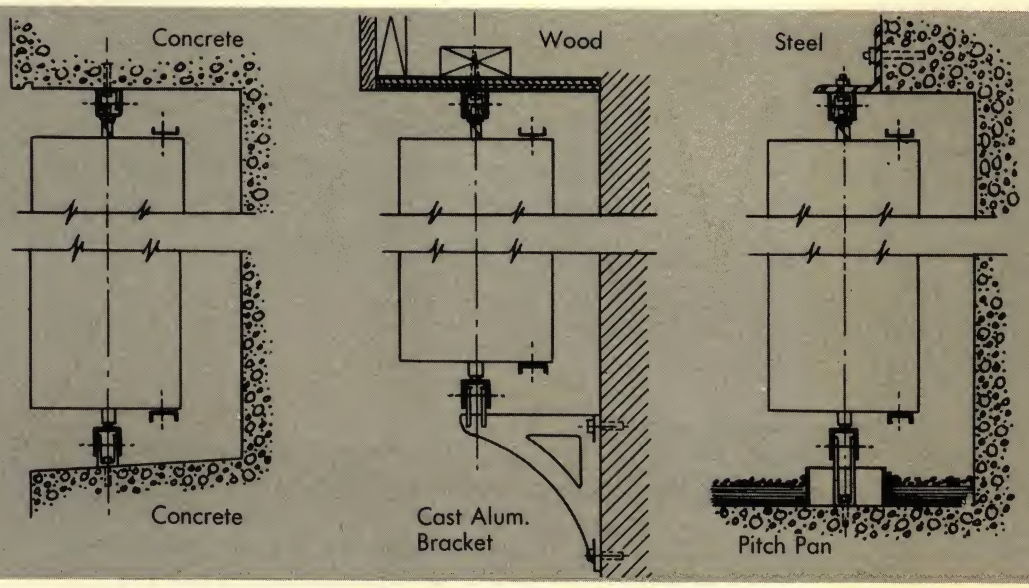
For more than twenty years, Brown Manufacturing Company has pioneered in the development of Sun Controls. Brown products are famous for excellence of detail. Note the details (at the right) of the unique stainless steel cone point bearing and the new "h" type sill channel.

The stainless steel cone point bearing never needs lubrication. Practically all the friction is eliminated. It never gets clogged with dirt and foreign particles.

The new "h" type sill channel features an integral light shield for better function and more pleasing appearance. Supplied only when specified.

For the best engineered product, specify Brown Sun Controls.

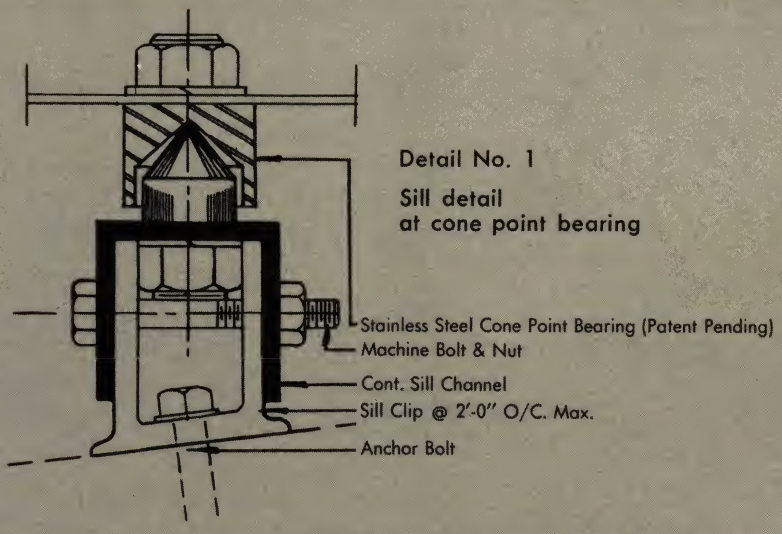
Installation Conditions



HEAD DETAILS

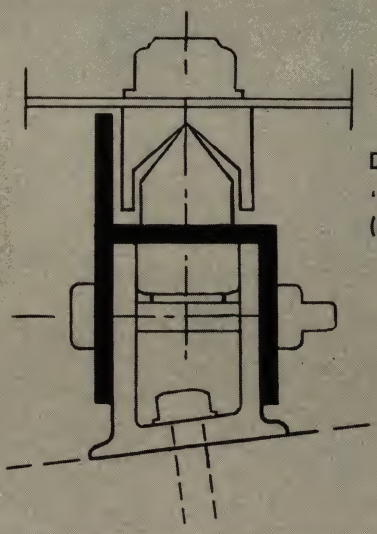
Typical installation details for some of the usual conditions. No scale.

SILL DETAILS



Detail No. 1

Sill detail
at cone point bearing



Detail No. 2

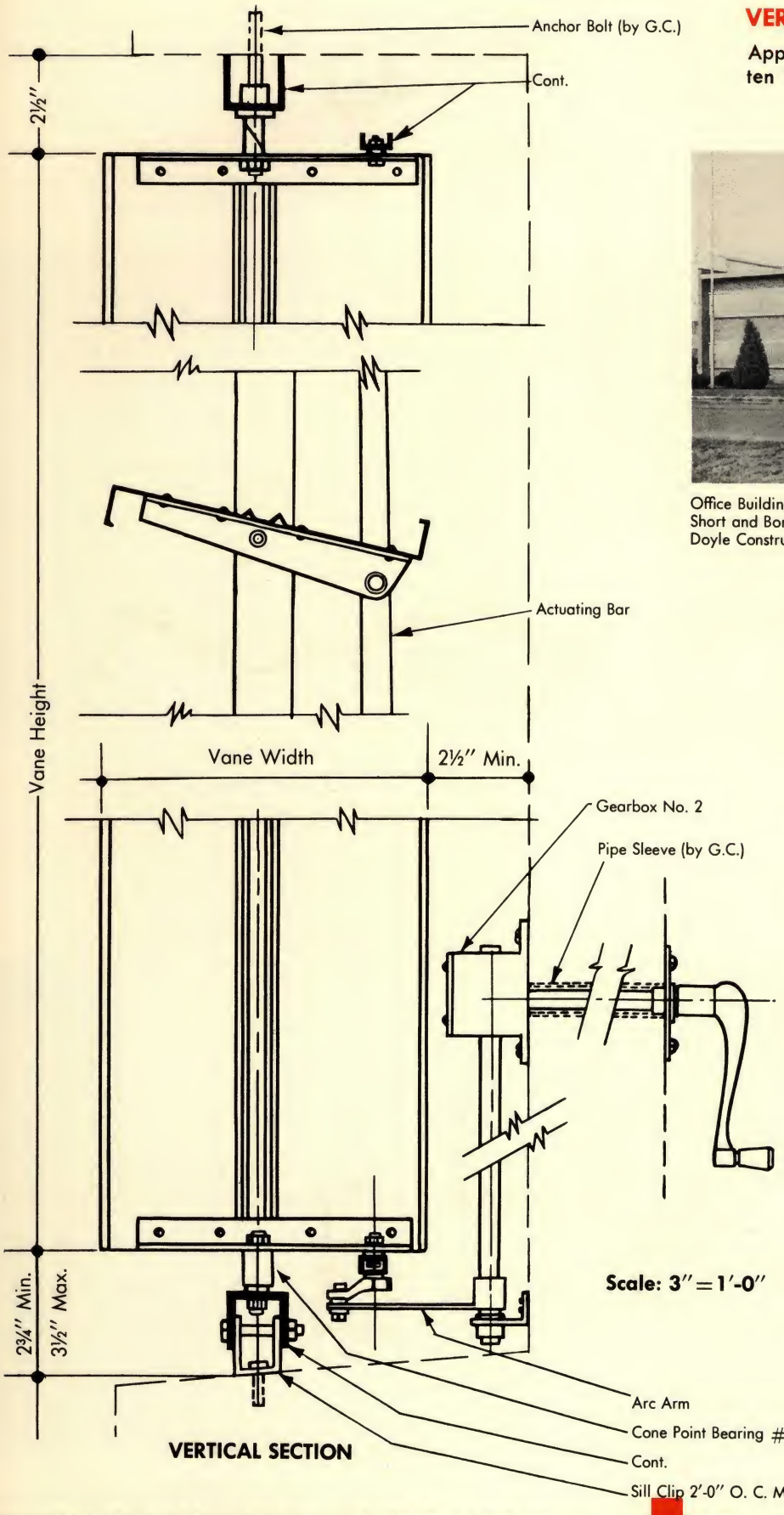
"h" type sill channel
(optional)

Details for your project will be promptly furnished on request and receipt of your preliminary drawings.

VERTICAL BA-1000-V

Approximate maximum vane limitations: ten feet long, thirteen inches wide.

Office Building for Cabot Shops, Inc., Pampa, Texas
Short and Boren, Architects
Doyle Construction Co., Contractors



VERTICAL SECTION

Scale: 3" = 1'-0"

Form vertical vanes accurately to detail with 5052-H34 aluminum, not less than (see table) inches thick. Rivet die formed brackets to ends of vanes. Head, sill and actuating bars to be extruded aluminum channels 6063-T5, as detailed. Attach head channel to soffit, and sill channel on aluminum "U" brackets. Space brackets not more than 24" on center. Head bearings to be stainless steel pins and oil impregnated bronze bushings. Sill bearings to be Brown's stainless steel Cone Point. Actuating bar bearings to be stainless steel shoulder bolts and oil impregnated bronze bushings.

See remainder of specifications on page 22.

Vane Height	Vane Width			
	7"	9"	11"	13"
4'	.040	.051	.064	.064
6'	.051	.064	.064	.064
8'	.064	.064	.064	.064
10'	.064	.064	.064	.064

Aluminum vane gauges calculated for 75 mile-per-hour winds. Consult factory when conditions require heavier design.

VERTICAL BA-1200-V

Approximate maximum vane limitations: twenty feet long, twenty-six inches wide.

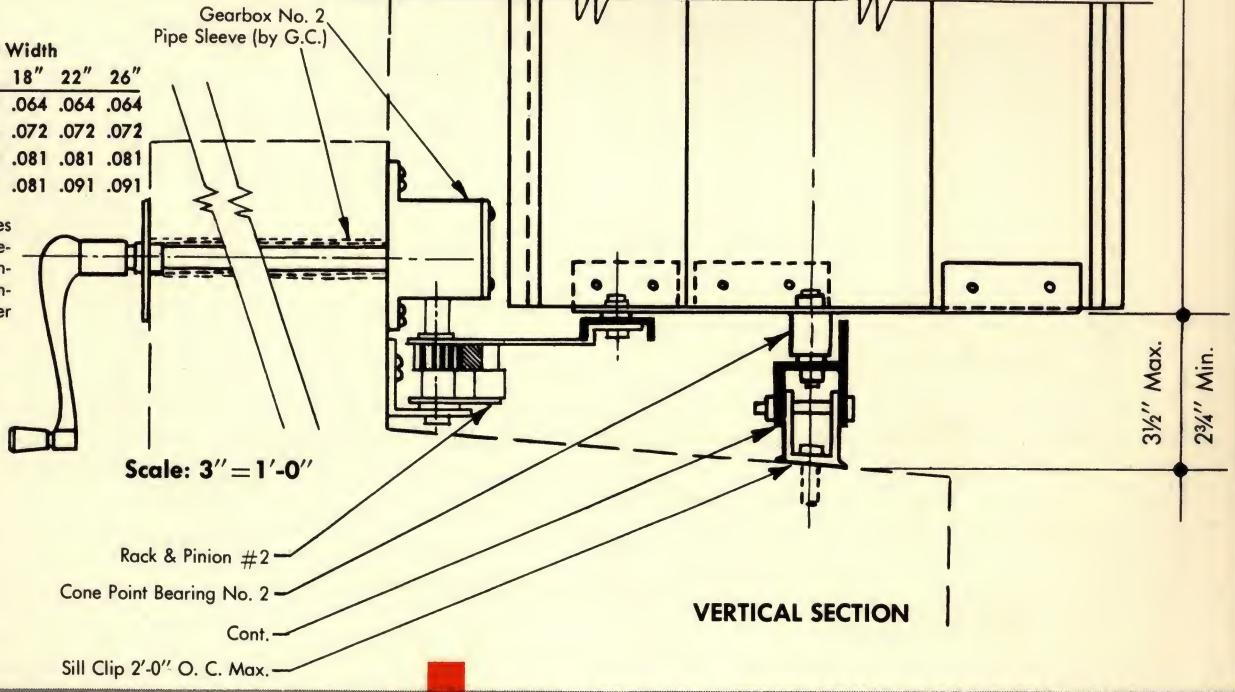
Office Building for IBM, Tulsa, Oklahoma
Hanton and Wilson, Architects
Insured Investments, Inc., Contractors

Form vertical vanes accurately to detail with 5052-H34 aluminum, not less than (see table) inches thick. Rivet die formed brackets to ends of vanes. Head, sill and actuating bars to be extruded aluminum channels 6063-T5, as detailed. Attach head channel to soffit, and sill channel on aluminum "U" brackets. Space brackets not more than 24" on center. Head bearings to be stainless steel pins and oil impregnated bronze bushings. Sill bearings to be Brown's stainless steel Cone Point. Actuating bar bearings to be stainless steel shoulder bolts and oil impregnated bronze bushings.

See remainder of specifications on page 22.

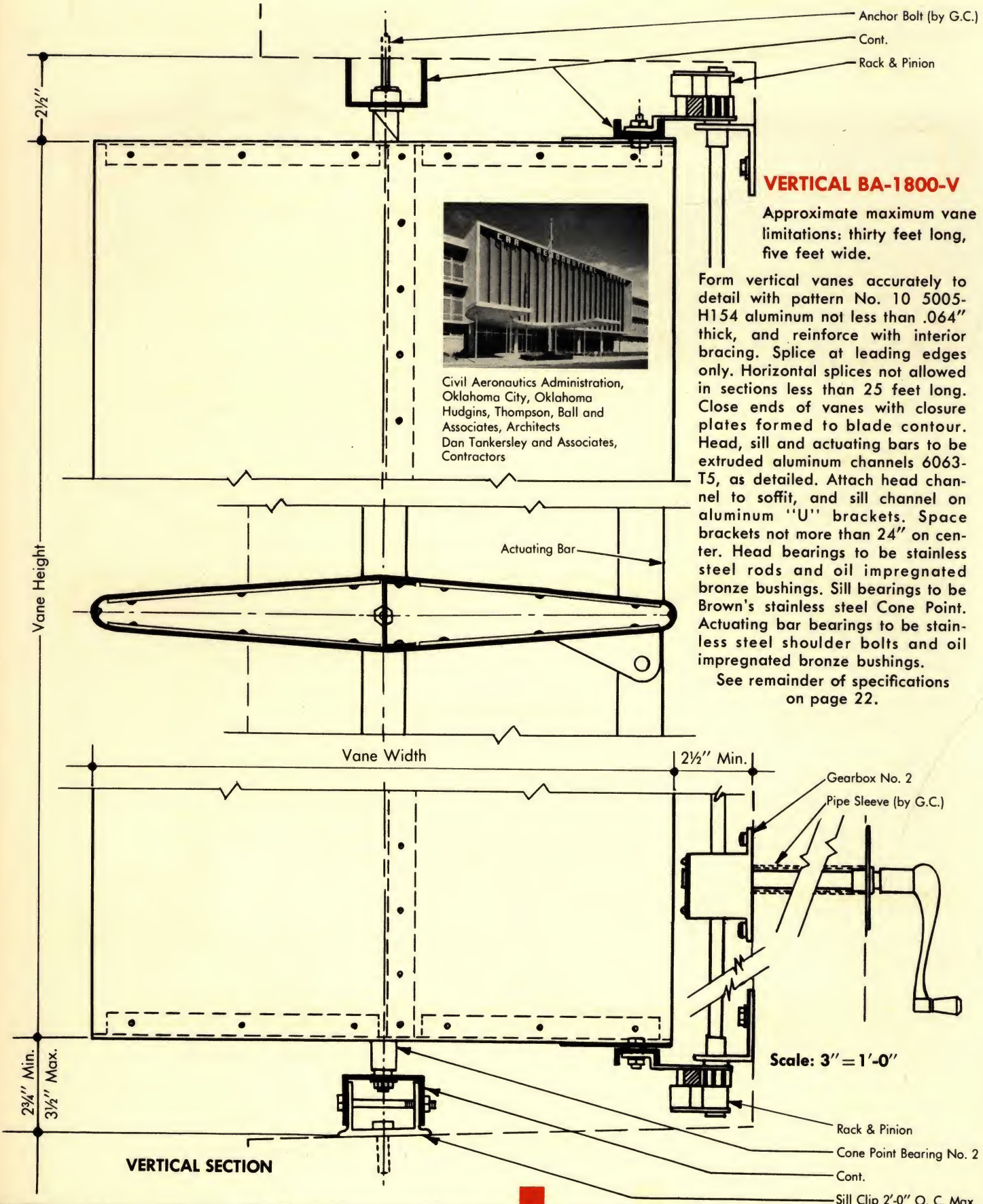
Vane Height	Vane Width					
	7"	10"	14"	18"	22"	26"
4'	.040	.051	.064	.064	.064	.064
10'	.064	.064	.064	.072	.072	.072
15'		.072	.072	.081	.081	.081
20'			.081	.081	.091	.091

Aluminum vane gauges calculated for 75 mile-per-hour winds. Consult factory when conditions require heavier design.



Scale: 3" = 1'-0"

VERTICAL SECTION



VERTICAL SECTION

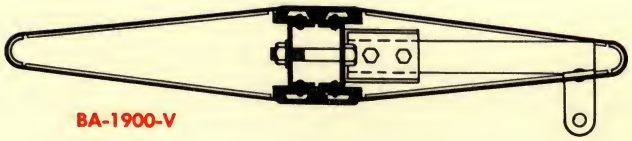
Civil Aeronautics Administration,
Oklahoma City, Oklahoma
Hudgins, Thompson, Ball and
Associates, Architects
Dan Tankersley and Associates,
Contractors

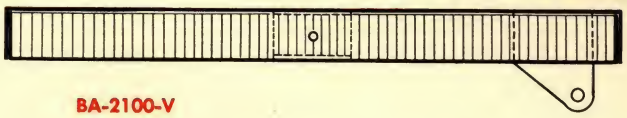
VERTICAL BA-1800-V

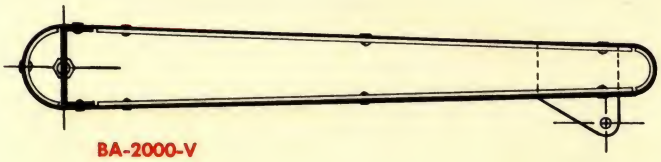
Approximate maximum vane limitations: thirty feet long, five feet wide.

Form vertical vanes accurately to detail with pattern No. 10 5005-H154 aluminum not less than .064" thick, and reinforce with interior bracing. Splice at leading edges only. Horizontal splices not allowed in sections less than 25 feet long. Close ends of vanes with closure plates formed to blade contour. Head, sill and actuating bars to be extruded aluminum channels 6063-T5, as detailed. Attach head channel to soffit, and sill channel on aluminum "U" brackets. Space brackets not more than 24" on center. Head bearings to be stainless steel rods and oil impregnated bronze bushings. Sill bearings to be Brown's stainless steel Cone Point. Actuating bar bearings to be stainless steel shoulder bolts and oil impregnated bronze bushings.

See remainder of specifications on page 22.


BA-1900-V


BA-2100-V

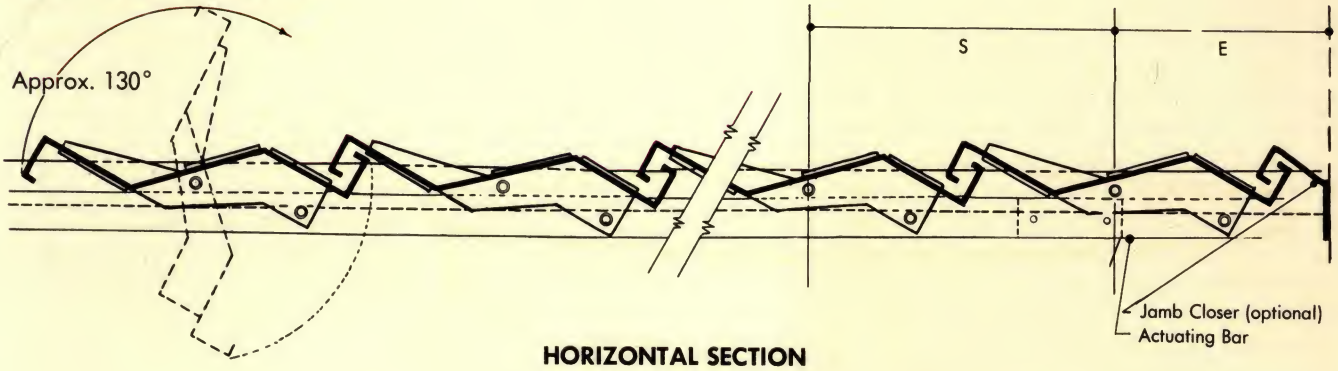

BA-2000-V


BA-1400-V

In addition to the models shown there are many other possibilities. Some of these are indicated above. Our experienced sun control staff works closely with architects in the engineering of unusual installations.

BA-1400-V	For applications that are too large for Model BA-1200-V.
BA-1900-V	Similar to model BA-1800-V except that all fastenings are concealed.
BA-2000-V	A hollow vane engineered for those applications which require a back pivot.
BA-2100-V	For those who prefer a rectangular shape—manufactured with a variety of cores.

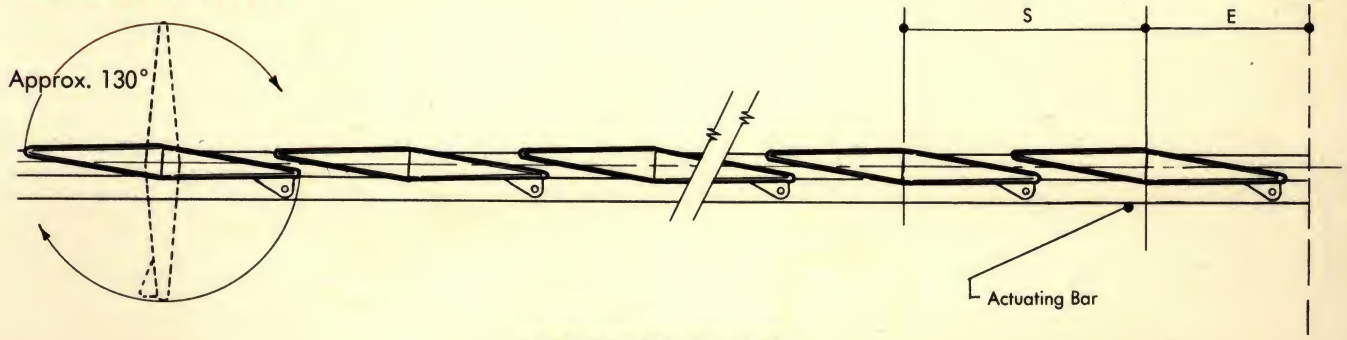
VERTICAL BA-1200-V



HORIZONTAL SECTION

The plan views are typical of all interlocking and overlapping vane models.
Note that in full closed position the vanes do not touch.
S = Vane Width — 1″ to 3″ (variable according to size of vanes)
E = ½ of vane width + ½″ (if E must be larger use jamb closer)
See remainder of specifications on page 22.

VERTICAL BA-1800-V

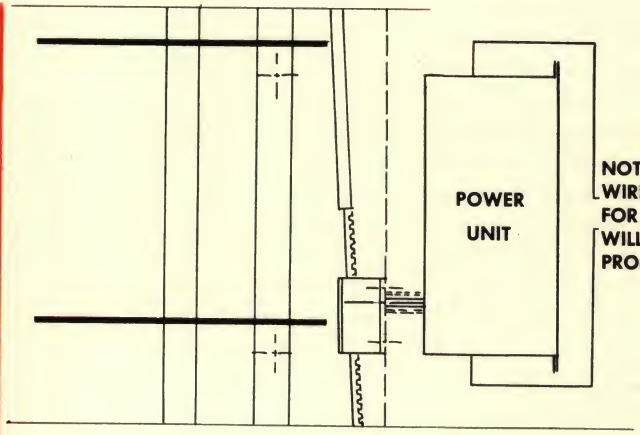


HORIZONTAL SECTION

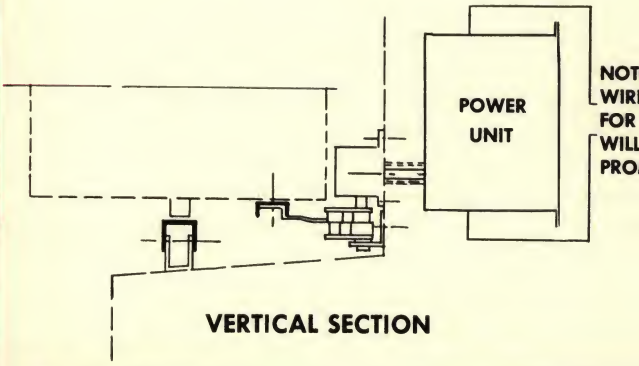
Operators & Control Systems

Details on the preceding pages indicate some of the typical manual operator arrangements for vertical sun control models. Exact operator design and specification depends upon job requirements; however, certain elements are common to all.

The actuating bar is linked to an arc arm (if the area of vanes is small) or a rack and pinion of cut-hardened steel cadmium plated which is connected to a vertical stainless steel shaft of variable size and length extending up or down. The vertical shaft is driven by a worm and pinion of cut-hardened steel, sealed in a grease-tight cast aluminum housing and permanently packed with lubricant. This assembly (the gear box) mounts outside the wall. Power is supplied to the gear box with a manual crank or an electric power unit.



PLAN



VERTICAL SECTION

Sho-Me Power Corporation, Marshfield, Missouri
Joe W. Amspacher, Architect
Bonjour Construction Company, Contractors

New Mexico Western College Library, Silver City, New Mexico
Wolgamood and Millington, Architects
Frank Tatsch, Contractor

Electric operation should be provided for maximum convenience on jobs of any size and maximum economy on large jobs. Electric operation also provides for uniformity of appearance as all vanes on any one elevation are adjusted simultaneously and in unison to the same position.

Electric operators consist of two components:

1. Power unit(s)
2. Control(s)

Power units are factory assembled electric units, which are custom manufactured to meet the requirements of each project. Regardless of capacity, the power units consist of fractional horsepower ratio reduction motors of the single split phase type, operating on 60 cycle, 115 volt, limit switches and overload protective devices.

Two or more power units may be required for one elevation, but regardless of the number of power units, they are all controlled simultaneously by one of four types of controls.

ELECTRIC CONTROL #1 provides for manual push button operation. The panel is flush mounted in a deep "handy" box, which should be located in view of the vanes controlled. One is required for each elevation.

ELECTRIC CONTROL #2 provides for time control operation. It positions the vanes according to a predetermined time schedule for hourly and seasonal requirements. Its primary components are: a 24-hour program-type clock, a reset timer, disconnect switches and a single pole double-throw switch which provides for manual control as in the case of control system #1. The manual control switch overrides the time control system. The control panel is housed in a flush mounted panel box, 10 inches wide by 12 inches high by 4 inches deep, equipped with a cylindrical lock. One is required for each elevation.

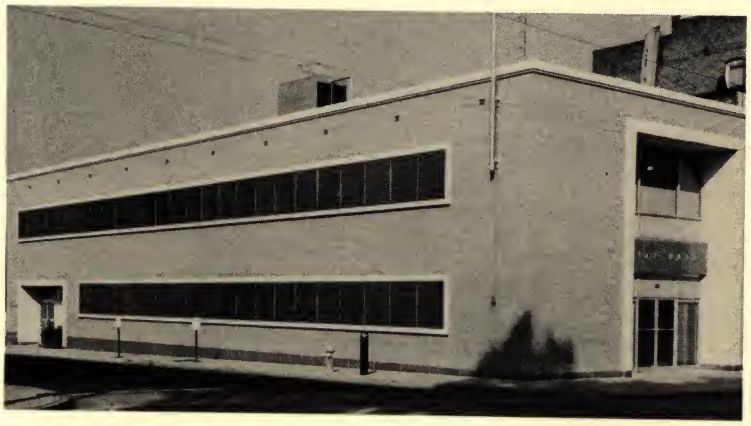
ELECTRIC CONTROL #3A (specify Electric Control #3 for horizontal louvers) provides for true solar control operation. It automatically positions the vanes to hold a desired light level behind the vanes. Time clocks, or other devices that require manual settings for seasonal changes, etc., are not used in this system. A "mock-up" of the vanes as they appear on the elevation must be located on the roof, free from shadows cast by other objects. Its primary components are a master power unit and photo-electric cell. A control panel is also provided and should be located in the building in view of the vanes controlled. Its primary components are: relays, potentiometers, electronic devices and a low voltage disconnect switch with manual reset. (Manual push button operation may be included in this control panel or as a separate control panel.) Single phase 60 cycle, 115 volt is required. The control panel is housed in a flush mounted panel box 15" wide by 30" high by 6" deep, equipped with a cylindrical lock. One is required for each elevation.

Assembly Plant for Ford Motor Company, Lorain, Ohio
Albert Kahn, Architect
Huber, Hunt & Nichols, Contractors

Dow Chemical Company — Texas Division, Administration-Engineering Group
Freeport, Texas, MacKie and Kamrath, AIA Architects
Knutson Construction Company, Contractors

HORIZONTAL BA-300-H

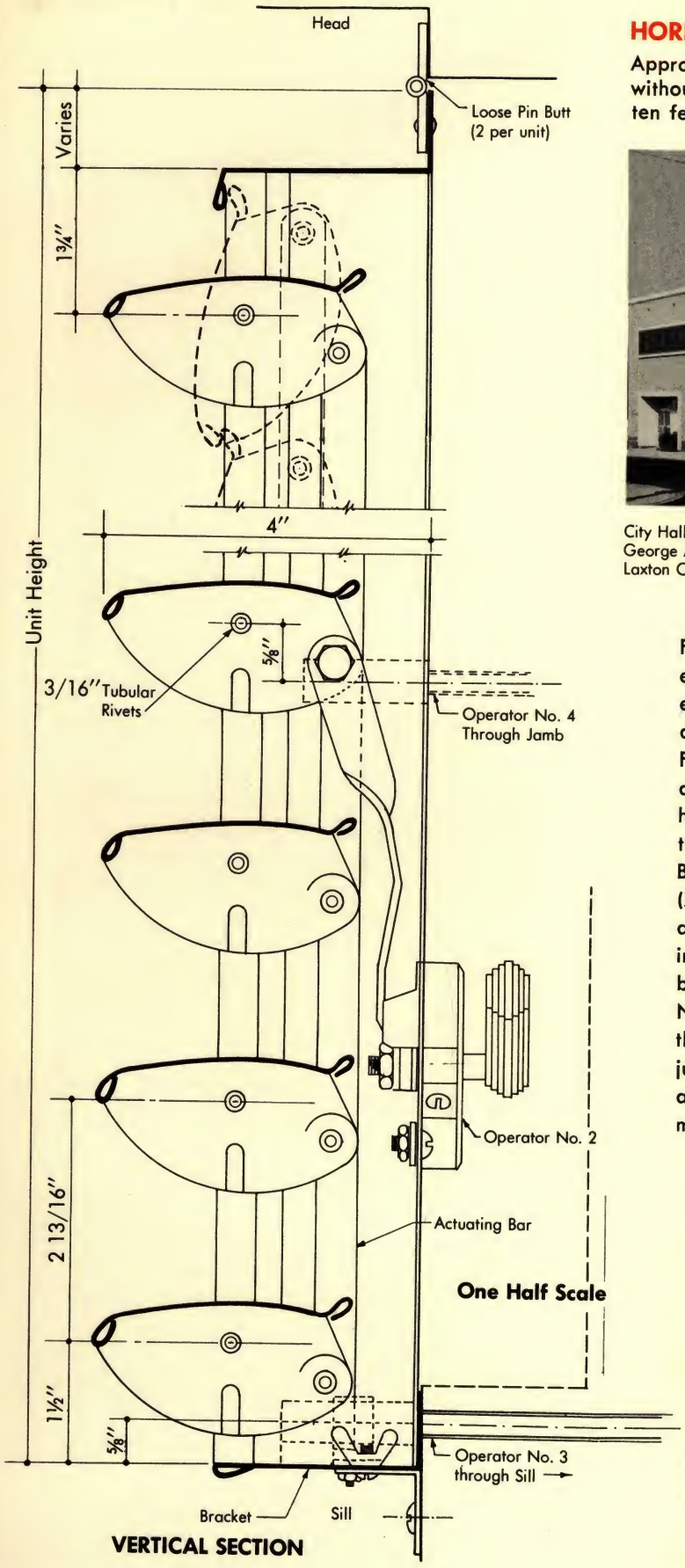
Approximate maximum unit limitations: three feet six inches wide without center straps, or five feet wide with center straps; ten feet long.



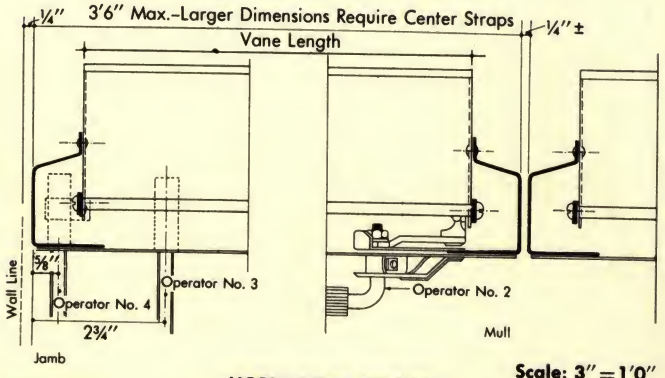
City Hall, Concord, North Carolina
George A. Griffin, Architect
Laxton Construction Company, Contractors

Form horizontal vanes to a convex surface with both long edges rolled under, break front edge down and back edge up, to interlock when closed. Form jambs to conceal actuating bars and to serve as a light and water baffle. Form head and sill accurately to detail, and weld to jambs at corners to form a one-piece frame. Material for vanes, head, sill and jambs to be 3003-H14 aluminum not less than .040" thick. Actuating bars to be ½" x ⅛" bar. Bearings at all points to be aluminum tubular rivets. (Zinc bonded steel, electro-chemically processed for paint adhesion, not less than .0276" thick may be used on inland installations. Bearings for steel material to be brass tubular rivets.) Operator to be No. 02 (specify No. 03 for through-the-sill operation or No. 04 for through-the-mullion operation), lever type with tension adjustment and automatic, positive lock when closed. Hinge at head and fasten at sill with brackets as detailed, or mount direct to screen frames.

See remainder of specifications on page 22.



VERTICAL SECTION



HORIZONTAL SECTION

Scale: 3" = 1'0"

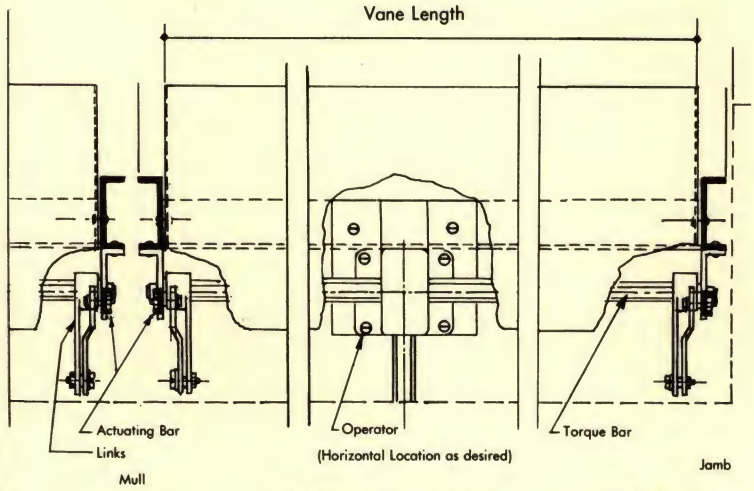
HORIZONTAL BA-500-H

Approximate maximum unit limitations:
four feet six inches wide, twelve feet long.

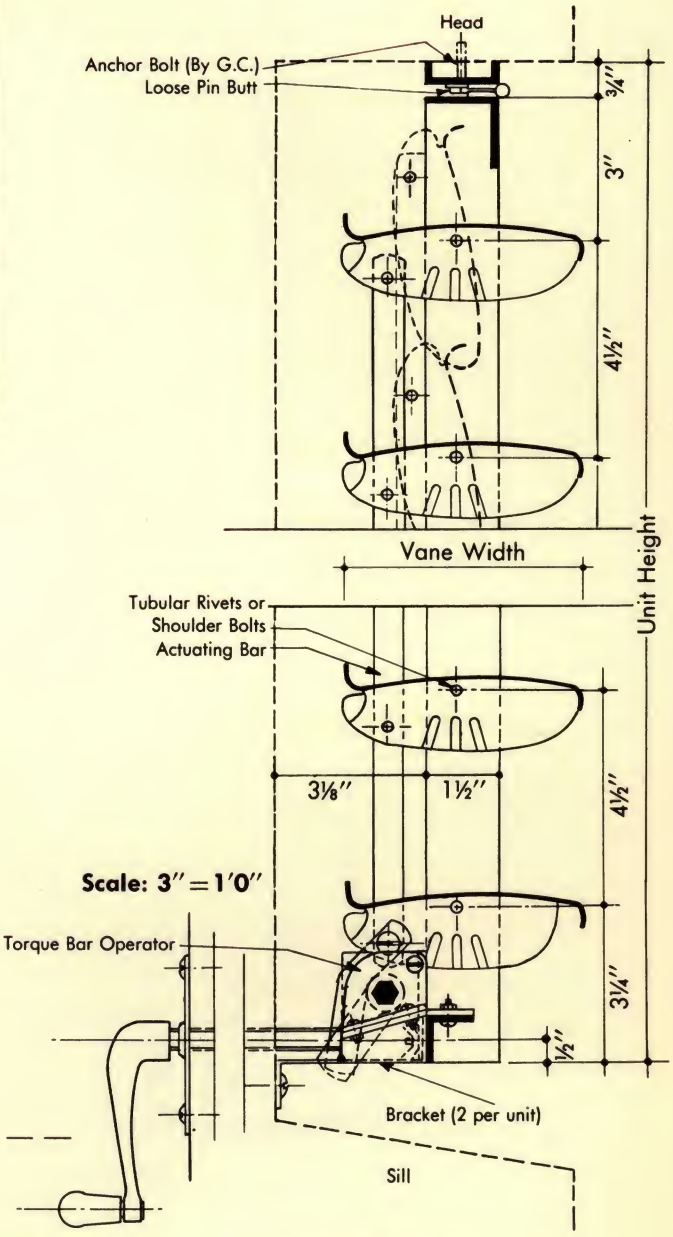
Office Building for Professional Business Men's Insurance, Denver, Colorado
Fisher, Fisher and Davis, AIA Architects
Long Construction Company, Contractors

Form horizontal vanes accurately to detail of 5052-H34 aluminum not less than .051" thick. End brackets shall be formed from the ends of the vanes as an integral part of the vanes. Head, sill, jambs and actuating bars to be 6063-T5 aluminum extruded angles or channels as detailed. All bearings to be tubular rivets (or stainless steel shoulder bolts and oil impregnated bronze bushings, if preferred). Operator to be enclosed gear type, torque bar, permanently lubricated. Hinge at head and fasten at sill with brackets as detailed.

See remainder of specifications on page 22.



HORIZONTAL SECTION **Scale: 3" = 1'0"**



VERTICAL SECTION

HORIZONTAL BA-1000-H

Approximate maximum vane limitations: eight feet long, twelve inches wide.

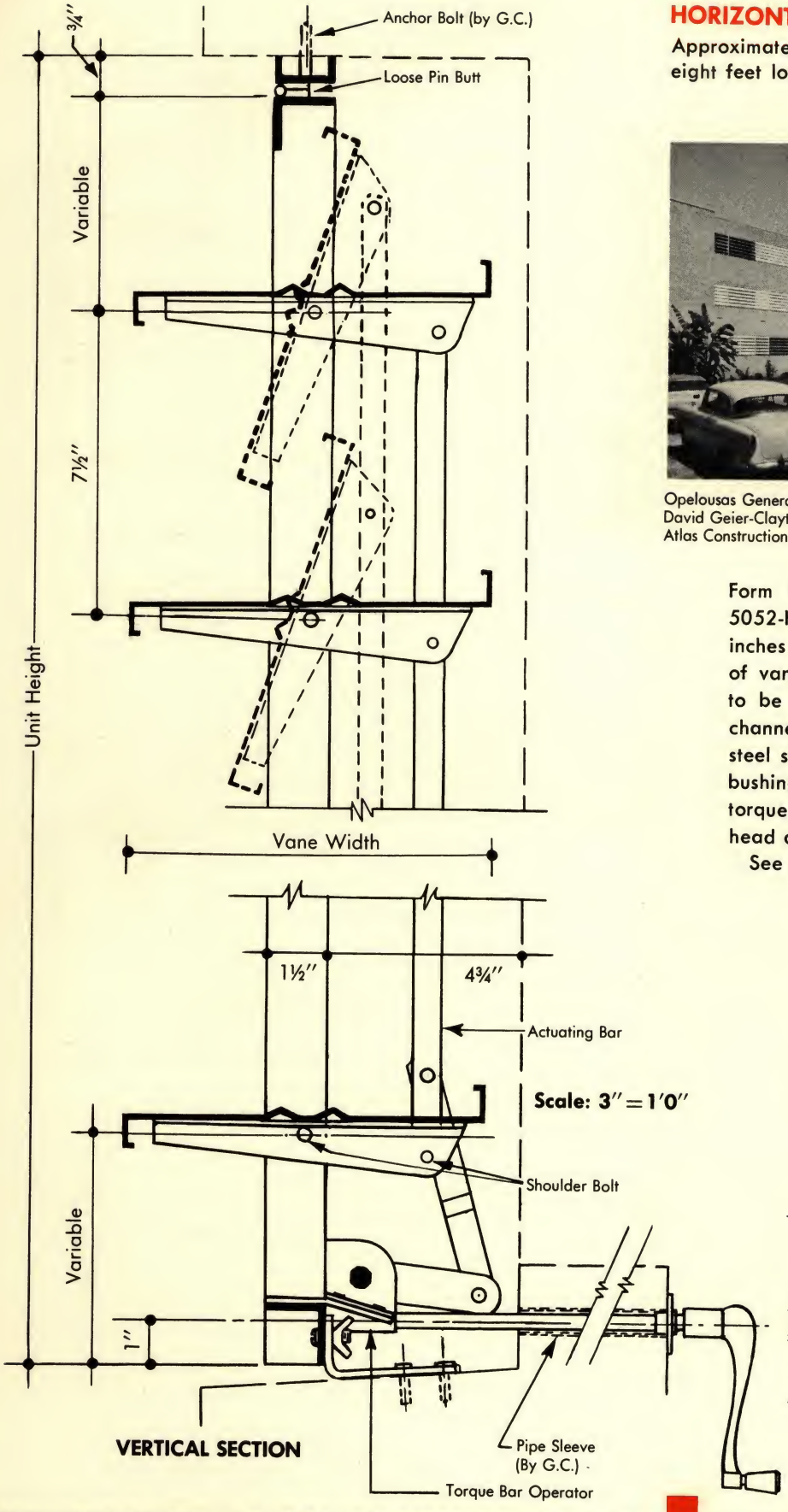
Opelousas General Hospital, Opelousas, Louisiana
David Geier-Clayton J. D'Avy, Jr., Associated Architects
Atlas Construction Company, Contractors

Form horizontal vanes accurately to detail of 5052-H34 aluminum not less than (see table) inches thick. Rivet die formed brackets to ends of vanes. Head, sill, jambs and actuating bars to be 6063-T5 aluminum extruded angles and channels as detailed. All bearings to be stainless steel shoulder bolts and oil impregnated bronze bushings. Operator to be enclosed gear type, torque bar, permanently lubricated. Hinge at head and fasten at sill with brackets as detailed.

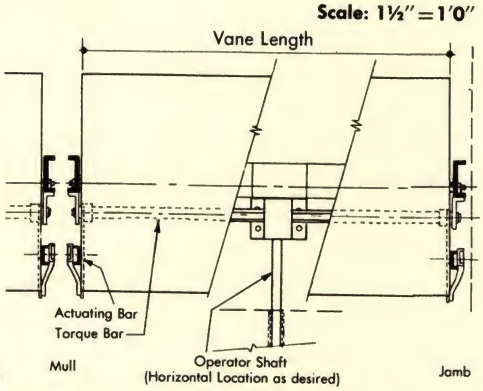
See remainder of specifications on page 22.

Vane Length	Vane Width		
	6″	9″	12″
4′	.051	.051	.064
6′	.061	.064	.064
8′	.072	.072	.072

Aluminum vane gauges calculated for 75 mile-per-hour winds. Consult factory when conditions require heavier design.



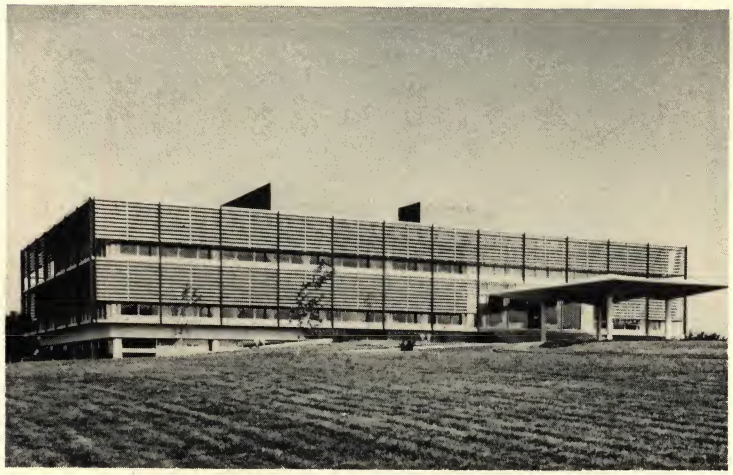
VERTICAL SECTION



HORIZONTAL SECTION

HORIZONTAL BA-1800-H

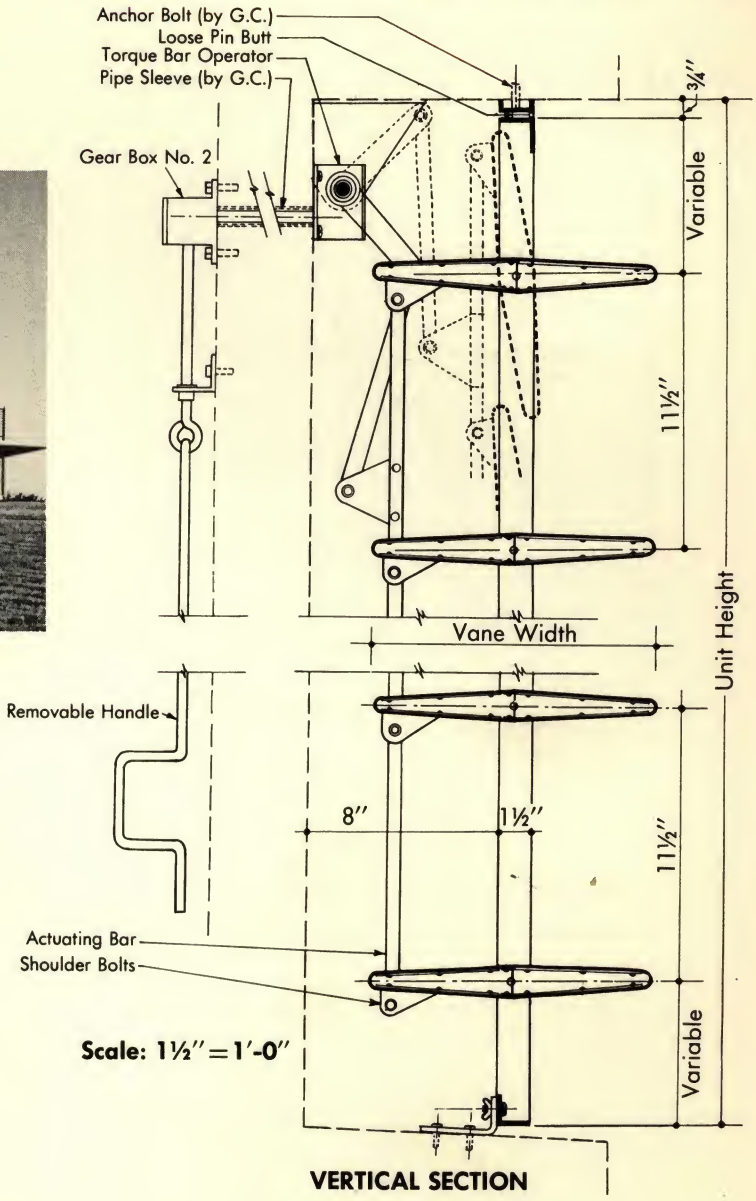
Approximate maximum vane limitations: ten feet long, twelve inches wide.



Missouri Public Service Company, Kansas City (Raytown), Missouri
Kivett, Myers and McCallum, Architects
J. E. Dunn Construction Company, Contractors

Form horizontal vanes accurately to detail of 5005-H14 aluminum not less than (see table) inches thick. Splice at leading edges only. Close ends of vanes with closure plates formed to vane contour. Head, sill, jamb and actuating bars shall be 6063-T5 aluminum extruded angles or channels as detailed. Vanes shall pivot on stainless steel pins in oil impregnated bronze bushings.

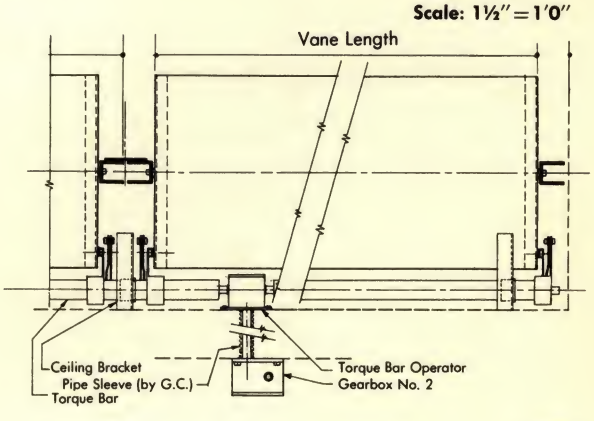
See remainder of specifications on page 22.



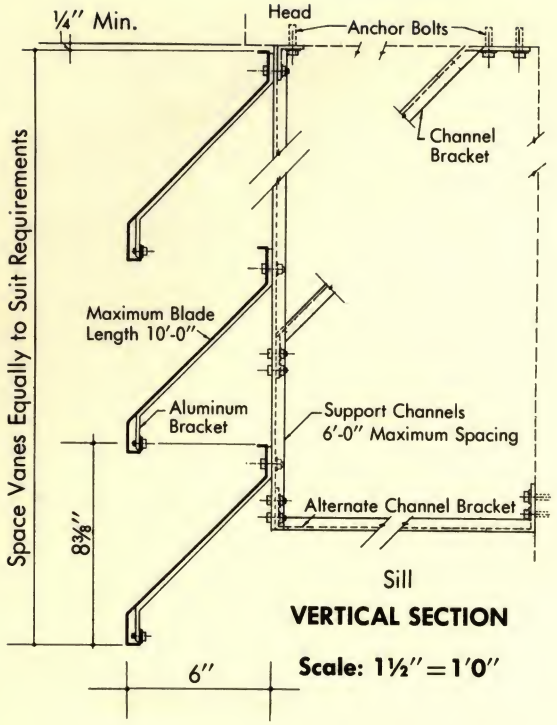
VERTICAL SECTION

Vane Length	Vane Width			
	6"	8"	10"	12"
4'	.040	.040	.040	.040
6'	.040	.040	.040	.040
8'	.040	.040	.040	.051
10'	.051	.051	.051	.064

Aluminum vane gauges calculated for 75 mile-per-hour winds. Consult factory when conditions require heavier design.



HORIZONTAL SECTION



VERTICAL SECTION

Scale: 1½" = 1'0"

BF-500-HF

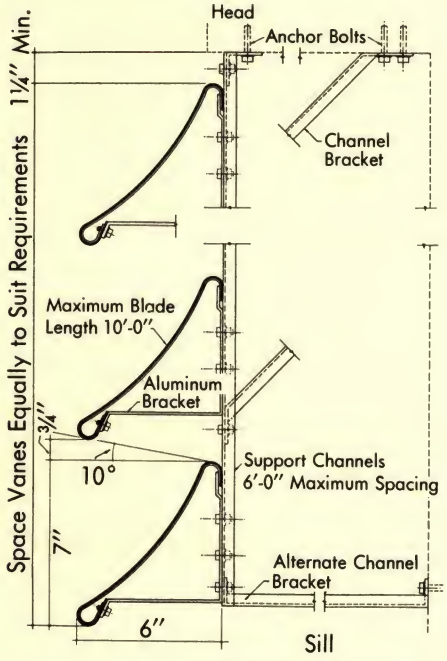
Approximate maximum vane length 10'.

First National Parking Garage, Oklahoma City, Oklahoma
Sorey, Hill and Sorey, Architects
Manhattan Construction Company, Contractors

Louisiana Life Insurance Company Building, New Orleans, Louisiana
Edward M. Y. Tsoi, Architect
Binnings Construction Company, Inc., Contractors

BF-600-HF

Approximate maximum vane length 10'.



VERTICAL SECTION

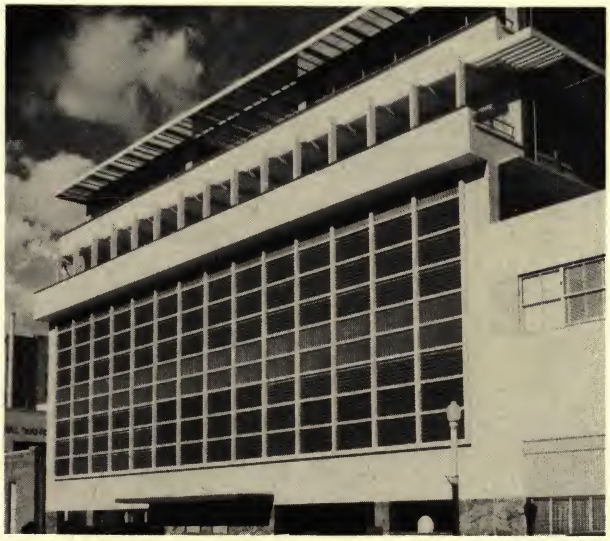
Scale: 1½" = 1'0"

BF-500-HF, BF-600-HF, BF-700-HF: Form vanes accurately to detail of 5052-H34 aluminum of a gauge as recommended by the manufacturer to suit job requirements. Form brackets from aluminum bar as detailed. All support members shall be 6063-T5 aluminum extruded channels or angles as detailed. Mounting hardware shall be cadmium plated steel, stainless steel or aluminum.

See remainder of specifications on page 22.

BF-700-HF

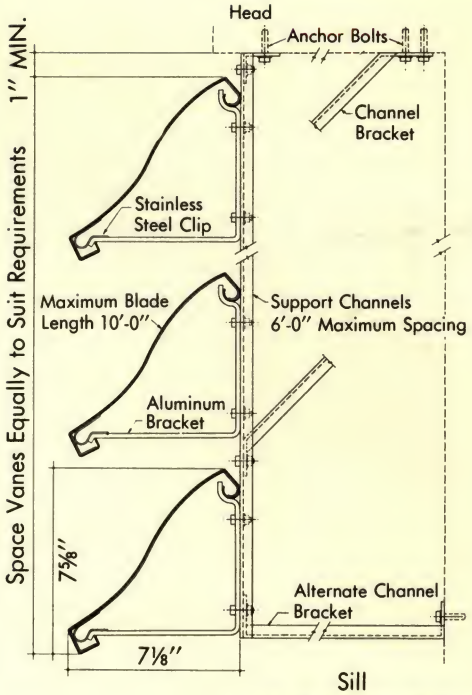
Approximate maximum vane length 10′.



First National Bank Parking Garage, Amarillo, Texas
Edmond Jura, Architect
James Taylor & Son, Contractor

Porterville Union High School, Library-Study Hall, Porterville, California
Robert N. Eddy, Architect
Willard K. Michael, Contractor

BF-800-HF: Vane shall be aluminum extrusions not less than .081″ thick. Brackets shall be aluminum extrusions not less than .125″ thick. There shall be no holes or bolts or other fastening devices through the vanes. All support members shall be aluminum extruded channels or angles as detailed. All extrusions shall be 6063-T5 aluminum. Mounting hardware shall be cadmium plated steel, stainless steel or aluminum. See remainder of specifications on page 22.

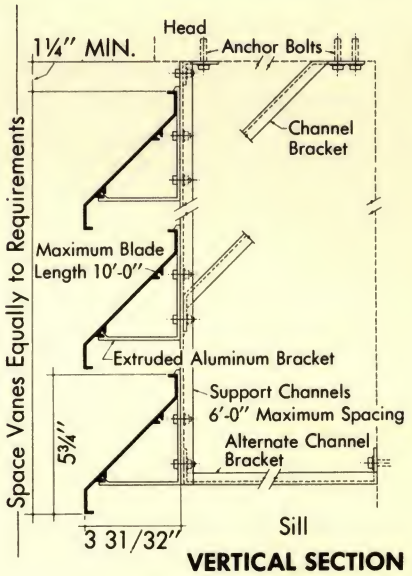


VERTICAL SECTION

Scale: 1½″ = 1′0″

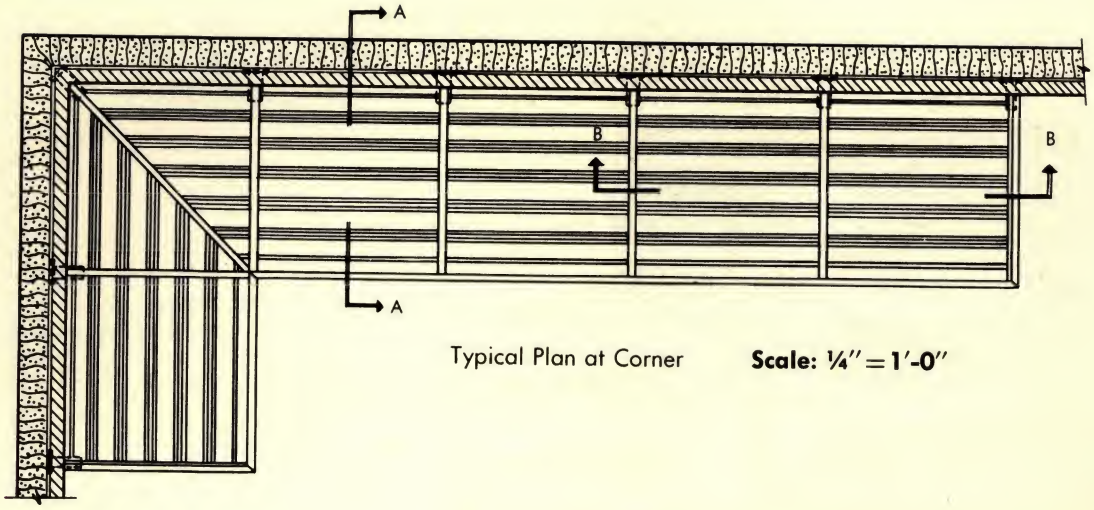
BF-800-HF

Approximate maximum vane length 20′.



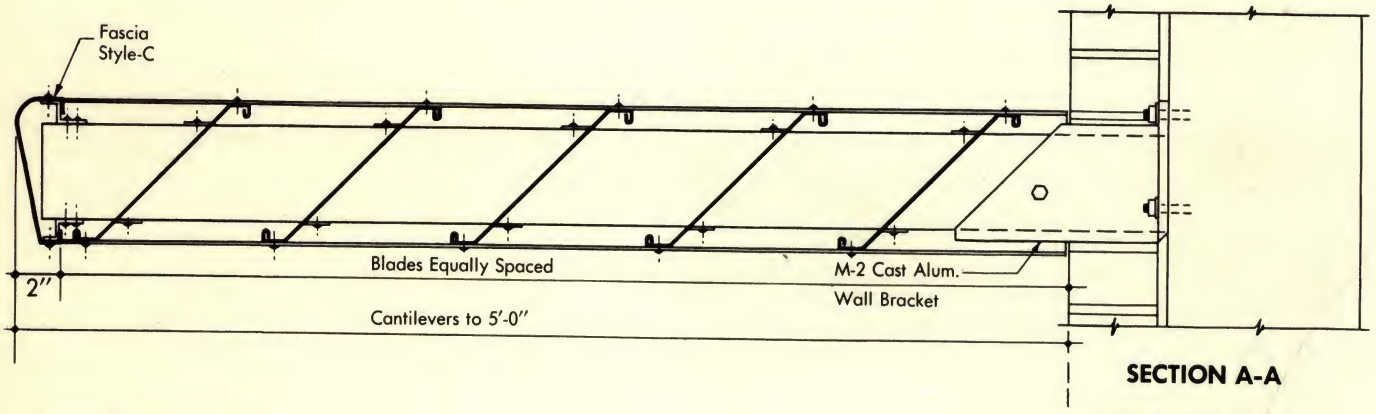
VERTICAL SECTION

Scale: 1½″ = 1′-0″



Typical Plan at Corner **Scale: ¼″ = 1′-0″**

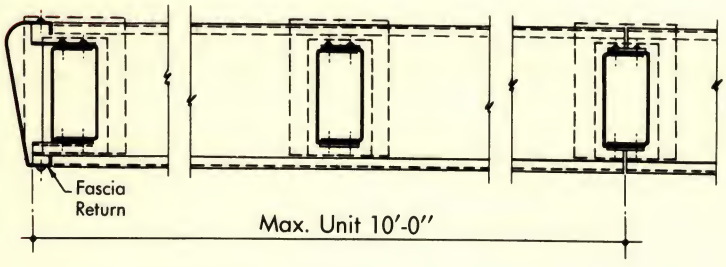
BF-200-C. Form vanes, outriggers and fascia accurately to detail from alloy and gauge as recommended by the manufacturer to suit job requirements. Overhead guy braces, or cast aluminum brackets for cantilever design shall be supplied as detailed.
See remainder of specifications on page 22.



SECTION A-A

Scale: 1½″ = 1′-0″

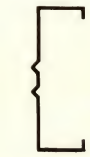
CANOPY BF-200-C



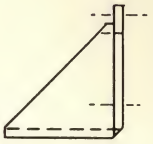
SECTION B-B

Scale: 1½″ = 1′-0″

Office Building for Von Hamm Young, Honolulu, Hawaii
Vladimir Ossipoff, Architect

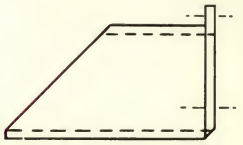


Fascia Style-B



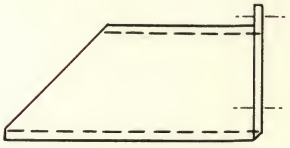
Wall Bracket M-1

Fascia Style-A



Wall Bracket M-2

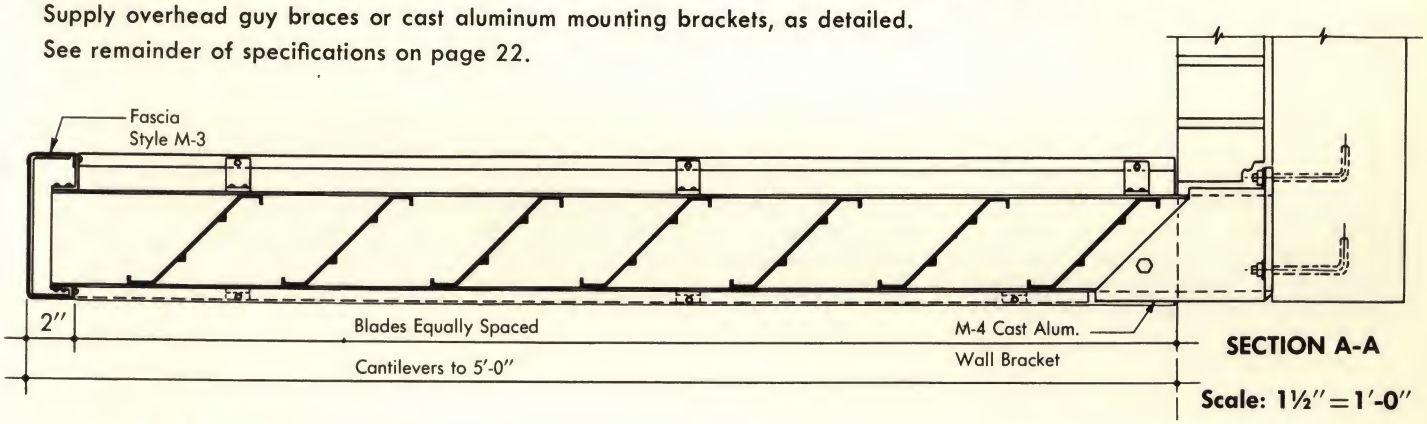
Fascia Style M-4



Wall Bracket M-3

BF-20E-C. Vanes, outriggers, fascia shall be 6063-T5 aluminum extrusions not less than .081″ thick. Supply overhead guy braces or cast aluminum mounting brackets, as detailed.

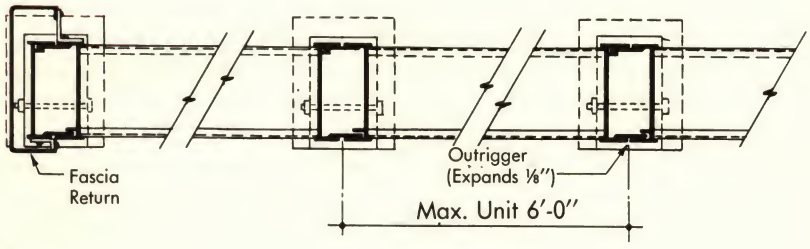
See remainder of specifications on page 22.



SECTION A-A

Scale: 1½″ = 1′-0″

CANOPY BF-20E-C



SECTION B-B

Scale: 1½″ = 1′-0″

Specifications

The following typical specifications may be used for applications with no unusual requirements. However, Sun Controls should be engineered to the particular requirements of each project, so we suggest that you consult with our engineers while your project is in the preliminary stage. This service will be supplied promptly, on request, with no obligation.

1. GENERAL Furnish and install sun controls where indicated and as detailed on the drawings, complete with necessary fastenings, operators and finish. Submit shop drawings for approval before fabrication. General contractor shall confirm critical dimensions in the field at the earliest possible date.

2. TYPE Sun Controls shall be Model..... as manufactured by Brown Manufacturing Company, 1940 Linwood, Oklahoma City, Oklahoma. Local Representative.....(name and address).....

3. SUBSTITUTIONS Specialty products of this type require experience and proven ability. Therefore, any proposed substitute must be a product manufactured by a firm normally engaged in this specific work and a full size sample shall be submitted for the architect's consideration at least two weeks prior to the date of bid opening. The general contract bidders will be notified by addendum if substitutes are approved.

4. OPERATION
   a. Vertical Models. Operate vertical vanes in parallel and unison through an arc of approximately 140 degrees from the closed position with (manual, electric) operator. (If electric operation is to be specified, add: Electric operators shall be located as indicated on the plans and shall have the characteristics of Brown's Power Unit and Brown's Control No. (1, 2 or 3a). See pages 12 and 13 for explanation of control systems.)

   b. Horizontal Models. Operate horizontal vanes in parallel and unison through an arc of approximately 90 degrees from the closed position with (manual, electric) operator. (If electric operation is to be specified, add: Electric operators shall be located as indicated on the plans and shall have the characteristics of Brown's Power Unit and Brown's Control No. (1, 2 or 3). See pages 12 and 13 for explanation of control systems.)

5. CONSTRUCTION All details of the sun control system shall be in accordance with current BROWN details and specifications. (Current standard specifications are noted on the detail pages of this catalog.)

6. FINISH
   a. Baked Enamel—Treat all material for paint adhesion, prime with zinc chromate primer and finish with highest quality synthetic baked-on enamel in color as selected by the architects.

   b. Alumilite—Alumilite all aluminum parts after fabrication in conformance with Aluminum Company of America Specifications 204-R1. Cadmium plate all ferrous hardware.

   c. Alcoa Architectural Exterior Color—Finish all formed aluminum parts in color as selected by the architect from Aluminum Company of America's recommended colors. Work to be done only by licensee of Aluminum Company of America in conformance with their specifications. (This finish requires special alloy aluminum not covered in Construction Specifications. Write for details.)

   d. Porcelain Enamel—Finish steel vanes with porcelain enamel in color as selected by the architect. Work to be done in accordance with applicable sections of the Porcelain Enamel Institute's specifications. Finish other parts with baked enamel in matching color or alumilite. (Note: Porcelain Enamel can only be applied to certain materials and for certain models. Write for details.)

   e. Mill Finish—(This is aluminum as shipped from the aluminum mills with no protective or decorative surface.)

7. INSTALLATION The manufacturer or his authorized representative shall install the sun controls in accordance with approved shop drawings. All units shall be properly aligned, square and plumb; adjust moving parts to operate properly, free from bind, warp and undue friction. General contractor shall set all anchor bolts in poured concrete. Electrical contractor shall do field wiring as required.

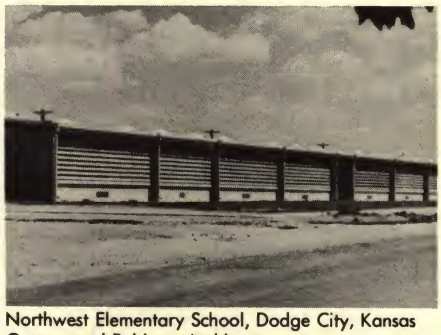
8. GUARANTEE All parts of sun controls, including operators, shall be guaranteed by the manufacturer for a period of two years from date of acceptance of the work. Any and all parts failing within this period shall be replaced or repaired by the manufacturer without charge.

Aluminum material has been designated throughout this catalog. If stainless steel or other materials are desired, write for information.

Brown Sun Controls have been installed in 38 states, Hawaii, Puerto Rico, Venezuela, Iran and Indonesia. If you would like to inspect one of these jobs, write for the location of our nearest installation.

Oil and Gas Journal Building, Tulsa, Oklahoma
Malcolm L. McCune, Architect
Horster Construction Company, Contractors

Civic Center Bldg., Bakersfield, California
Robert N. Eddy AIA & Associates, Architect
David M. Biggar, Contractor

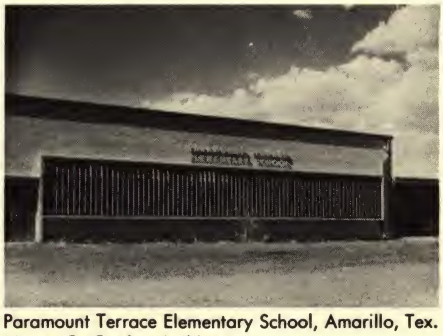


Northwest Elementary School, Dodge City, Kansas
Gurtner and Robison, Architects
Caro Construction Company, Contractors

Mistletoe Express Service, Inc., Oklahoma City, Okla.
Coston, Frankfort and Short, Architects
Charles M. Suttle Construction Company, Contractors

KVOO Radio and Television, Tulsa, Oklahoma
Koberling and Brandborg, AIA Architects
Ward Construction Company, Contractors

Security Federal Savings and Loan, Okla. City, Okla.
Noftsger and Lawrence, Architects
C. H. Hughes Construction Company, Contractors



Paramount Terrace Elementary School, Amarillo, Tex.
Macon O. Carder, Architect
Claude Mathis, Contractor

Classen Terrace Building, Oklahoma City, Oklahoma
Hudgins, Thompson, Ball and Associates,
Architects-Engineers

Colorado Department of Employment, Denver, Colo.
Fisher, Fisher and Davis, AIA Architects
Thomas Bate and Sons, Inc., Contractors

Safeway Office Building, Dallas, Texas
White and Feinberg, Architects
Cowdin Brothers, Contractors

Firestone Tire and Rubber Company, Columbus, Ohio
William F. Knokoph, Staff Architect, Firestone Co.
The Knowlton Company, Contractors

Brown Sun Controls are custom manufactured for each installation. That's why the consulting service of our sun control engineering staff is so important in the preliminary planning stage. We work closely with the architect to provide engineering recommendations and cost data . . . quickly and without charge. Take advantage of our experience in all types of sun control applications.

Brown Sun Controls are delivered by our own fleet of trucks, assuring a prompt, dependable shipment to any job site in the United States.

REPRESENTATIVES IN MAJOR CITIES

ALABAMA, Birmingham
Building Specialties Co., Inc., 528 North Ninth Street
Montgomery
Morton Sales Company, Inc., 782 South Hull Street
ARIZONA, Phoenix
Taylor Industries, Inc., P. O. Box 7133
ARKANSAS, Little Rock
John F. Brett and Company, 315 W. Markham Street
CALIFORNIA, Bakersfield
Lew Virden Associates, P. O. Box 1302
Los Angeles
The Haro Company, 8333 Atlantic Boulevard
Sacramento
Robert Cronin Company, 1331 "T" Street
COLORADO, Denver
Colorado Builders' Supply, 1534 Blake Street
FLORIDA, Miami
Brown Mfg. Co. of Florida, Inc., 3790 N. W. 81st
GEORGIA, Atlanta
Industrial Equipment Co., 78 Baker St. N. W.
HAWAII, Honolulu
Aluminum Products Hawaii Ltd., 308 Ward Avenue
ILLINOIS, Chicago
Harold A. Schweig & Co., 1325 Belmont Avenue
INDIANA, Richmond
Runnels Builders Products, 306 Randolph Street
IOWA, Marshalltown
Landy Distributors, P. O. Box 304
KANSAS, Hutchinson
Supply Service, Inc., 528 South Main
Wichita
Claude Balzer, Inc., P. O. Box 2141
KENTUCKY, Louisville
John W. Bishop, 5530A South Third Street
LOUISIANA, New Orleans
Favrot and Pierson, 3511 Toulouse
Shreveport
Aluminum Awning & Jalousie Co., 2828 Jewella Avenue
MASSACHUSETTS, Boston
Walsh-Hannon-Gladwin, Inc., 755 Boylston Street
MICHIGAN, Detroit
J. M. Power & Company, 2609 Book Tower
MINNESOTA, Minneapolis
W. L. Hall Company, 2814 Dupont Ave. South
MISSISSIPPI, Jackson
Thrasher Company, 2689 Livingston Road
MISSOURI, Joplin
Joplin Cement Company, 1002 Moffet
Kansas City
B D R Engineering Corp., 4243 Pennsylvania Ave.
Springfield
Southwestern Insulation & Material Co., 1301 St. Louis Street
St. Louis
Len A. Maune Company, 8500 Eager Road
NEBRASKA, Omaha
Porter-Trustin Company, 2300 Block N. 18th Street
NEW JERSEY, Trenton
Winner-Whelan Corporation, 50 Brooks Street
NEW MEXICO, Albuquerque
COBUSCO Steel Products Co., 2001 Gold Ave. S. E.
NEW YORK, Albany
Frank J. Spath, 32 Buckingham Drive
NORTH CAROLINA, Charlotte
Beaman's, Inc., 120 Builders Building
Greensboro
Beaman's, Inc., 1060 Battleground Ave.
OHIO, Cincinnati
Durbrow-Otte Associates, 1426 Clay Street
Columbus
Alvan Tallmadge Company, 624 Harmon Avenue
Dayton
Kanaga-Runnels Company, 13 Stratford Avenue
OKLAHOMA, Oklahoma City
Brown Manufacturing Company, 1940 Linwood Boulevard
Tulsa
Patterson Steel Company, P. O. Box 2620
PENNSYLVANIA, Philadelphia
Winner-Whelan Corp., 1612 Latimer Street
Pittsburgh
Building Specialties Company, 951 Century Building
SOUTH CAROLINA, Columbia
Columbia Air-o-Blind Co., Inc., P. O. Box 5194
TEXAS, Amarillo
Air-o-Blind Company, 2115 West Third
Austin
L. B. Shifflett Company, 407 North Lamar
Dallas
Samuel A. Ellsberry Company, 3136 Routh Street
El Paso
El Paso Plate Glass Co., Inc., 909 Texas Street
Fort Worth
Samuel A. Ellsberry Company, 2831 Crockett Street
Houston
Henry W. Garrett & Company, 2027 Harold Avenue
San Antonio
Samuels Glass Co., 221 Newell Avenue
TENNESSEE, Memphis
Modern Doors & Windows, Inc., 2954 Summer Avenue
Nashville
Whittemore Products Co. of Tennessee, 4012 Hillsboro Road
UTAH, Salt Lake City
COBUSCO Steel Products, 660 W. South Temple Street
VENEZUELA, Caracas
Industrial Incorporado C. A., Apartado 3985
VIRGINIA, Richmond
J. S. Archer Company, 1103 East Main Street
WASHINGTON, Seattle
F. T. Crowe and Co., Inc., 329 Second Avenue West
Spokane
Engineered Building Specialties, 3421 South Pittsburg
WASHINGTON, D. C.
James A. Cassidy Co., Inc., Eighth & Lawrence Streets N. E.
WYOMING, Casper
Colorado Builders' Supply, 2100 E. Yellowstone Highway

BROWN
mfg. co.

OKLAHOMA CITY 6,
OKLAHOMA
1940 LINWOOD
CEntral 2-3400